FROM TRACK TO ROAD

HOW MOTOR SPORT SAFETY INSPIRES ROAD SAFETY INNOVATION
Motor sport is also providing a spur for environmental innovation. Delivering maximum performance with minimum fuel use provides vital competitive advantage. Formula One has dramatically reduced fuel use and demonstrated the effectiveness of hybrid systems with the introduction of KERS (Kinetic Energy Recovery System) while the new Formula E series is developing and showcasing electric car technology. Formula E’s ambition of dynamic charging through infrastructure built into the race track could help to develop equivalent future technologies for the road car industry. The FIA Foundation is a leading partner in the Global Fuel Economy Initiative (GFEI) which aims to double the average fuel efficiency of passenger cars by 2030.

Driving environmental change

As an active partner in the #SaveKidsLives campaign, which achieved more than a million signatures for its ‘Child Declaration’ in 2015, the FIA Foundation is part of a global call to action urging governments to define and deliver their contribution to meeting the SDG road safety targets.

Watch ‘Save Kids Lives’, a powerful PSA directed by Luc Besson, to learn more about the global road safety issue.

http://savekidslives.fia.com

From the first days of the automobile, motor racing and road car development have advanced side by side. Innovations spurred by competition have also benefited every day vehicle use. This is not only true for areas such as engine and chassis design, gearbox technology and tire development, but also for key safety features.

While racing is about speed and endurance, it is also about injury prevention and obeying rules. Over recent decades, responsible motor sport has sought to introduce the ‘Safe System’ to the race circuit. Crashes happen in racing, as on the road. But the aim should be to engineer the car and circuit, and design the rules, to minimize risk of death or serious injury. Many of the technical and governance innovations in racing cars and the race control have also influenced improvements in road safety.

The FIA Foundation is a global road safety philanthropy, working with partners across the world to promote road traffic injury prevention by investing in programs which promote safe highway infrastructure; safer vehicles; protection for vulnerable road users; effective enforcement; and post-crash interventions. We have led international advocacy efforts to increase action on the global road death epidemic, including securing inclusion of road safety in the UN’s new Sustainable Development Goals. Currently we are uniting with organisations across the world as part of the #SaveKidsLives campaign.

The FIA Foundation also supports leading international researchers working on cutting-edge technological and engineering solutions to make motor sport safer. Since 2004, through funding to the FIA Institute for Motor Sport Safety & Sustainability and, latterly, its research partner the Global Institute for Motor Sport Safety, Research (Global Institute), the Foundation has enabled improvements in areas such as high speed barriers, debris fences, wheel-tethers and crash impact testing. We have also facilitated the training of safety marshals and other officials around the world, and supported improved medical care and crash extraction training. We also collaborate directly with the world governing body for motor sport, the FIA, by supporting motor sport safety events and activities that fall within our charitable objectives. With a global TV audience of hundreds of millions of fans, motor sport offers a high profile platform for promoting the Safe System and persuading political leaders and policymakers to act.

EXAMPLES OF CURRENT MOTOR SPORT SAFETY RESEARCH UNDERWAY

THUMS STUDY – MRI SCAN 1 + 2
Full-scale MRI scans of racing drivers in their actual seating positions were conducted in order to directly analyze spinal geometry and stresses within the current LMP1 seating arrangements.

THUMS STUDY – SEAT BACK ANGLE ANALYSIS
Models of the drivers, seat, and cockpit environment were analyzed using THUMS virtual crash simulations (in cooperation with Toyota Motor Corporation) to try and reduce spinal stresses and head displacement during impact scenarios through the adjustment of the seat back angle, among other parameters. Safety advancements will be enforced through LMP regulation changes over upcoming seasons. This research could also have wider application.

HIGH SPEED CAMERA
The high speed camera has been introduced for Formula One to improve engineer’s understanding of the driver’s head and neck movement during a crash event. The system looks to be cascaded to lower formulae in the coming years before a cost effective version can be applied to the road industry to be incorporated within ADAS autonomous vehicle technology.

RALLY DOOR FOAM TEST
Research work has been conducted to create a new rally door foam standard to increase (co-)driver protection in the event of lateral impact scenarios. The foam is to be gradually introduced to all levels of competitive rally championships sanctioned by the FIA, with potential for road car application in the future.

VIRTUAL CRASH SIMULATIONS
Work is being carried out jointly with major car manufacturers to help improve the safety features of World Rally Championship (WRC) cars. Specifically, complex virtual crash simulations have been utilised to help define increased driver protection for cases of lateral impact, with these improvements targeted for the 2017 season.

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SAFE, CLEAN, FAIR & GREEN: THE FIA FOUNDATION’S MOBILITY ACTION AGENDA

Promoting ‘Safe Systems’ for safer roads

We provide vital catalytic funding to enable innovative road safety programmes which, taken together, promote the ‘Safe Systems’ approach to casualty reduction. Through the International Road Assessment Programme (iRAP) and the Global New Car Assessment Programme (Global NCAP), independent star ratings for highways and vehicles are providing transparency and promoting policy change. We also support vital country-level campaigns focused on legislative change, awareness and enforcement, working through expert local partners.

Cleaning up vehicles and fuels

The FIA Foundation supports the Partnership on Clean Fuels and Vehicles (PCFV) to reduce the climate and health impacts of black carbon and particulate matter (PM) emissions. Diesel vehicles are responsible for up to 99% of all black carbon from road transport. PCFV is working to reduce sulphur levels in fuel below 50ppm, which enables particulate filter technologies to be added – potentially saving 700Gg of black carbon by 2030.

Advocating for fair mobility and healthy streets

Improving walkability and providing safe cycle networks can reduce car dependence, promote healthy travel and improve the liveability of cities. Working with partners including the UN Environment Programme and the World Resources Institute, the FIA Foundation advocates for equitable access to safe, clean and low-carbon mobility choices. Our particular focus is the rights and needs of children, and together with UNICEF, Save the Children and NGOs worldwide we design solutions and build alliances for safe and healthy streets for every child.

Facilitating fuel economy strategies

Hosted at the FIA Foundation, the Global Fuel Economy Initiative is scaling up work assisting countries in developing fuel economy policies. At the Climate Change Conference in Paris in December 2015, GFEI announced that almost 40 new countries have committed to fuel economy, taking the total number of countries we work with to 65 countries. Achieving the GFEI target of doubling average fuel economy by 2050 would save 33 Gt of CO2, 54 billion barrels of oil, and result in net savings of $8 trillion.